

Data for Action: How can NHSN Data be used to guide prevention efforts in Long-term Care Facilities

Elisabeth Mungai, MS, MPH
2/29/2016

Learning Objectives

- ❑ Describe the dataset generation process
- ❑ Discuss the structure of the analysis output options
- ❑ Analysis output options for
 - CDI LabID events
 - UTI events
 - Prevention Process measures

GENERATING DATASETS

Generating Datasets

- ❑ **Generating datasets is the first step in performing analysis in NHSN**
 - Takes a snapshot of the data
 - Organizes data into defined sets for analysis
 - Allows for quicker generation of reports
 - When analyzing data in NHSN, you are using a *copy* of the data, not the live database
- ❑ **Each user has his/her own analysis datasets**
- ❑ **May take several minutes to complete this process**
- ❑ **You may navigate within NHSN while datasets are generating**

Generating Datasets

- ❑ To generate datasets, navigate to Analysis>Generate datasets

The screenshot displays the NHSN Home interface. The left sidebar contains a navigation menu with the following items: NHSN Home, Reporting Plan, Event, Summary Data, Analysis, Surveys, Users, Group, Tools, and Log Out. The 'Analysis' menu item is highlighted with a hand cursor icon. Under 'Analysis', there are two sub-items: 'Generate Data Sets' and 'Output Options'. A red arrow points to the 'Generate Data Sets' sub-item. The main content area shows the user is logged into the LTCF Test Group (ID 11260) as GVB3, with all facilities selected. Below the login information are two buttons: 'Expand All' and 'Collapse All'. A list of folders is displayed below these buttons, including 'MDRO/CDI Module - LABID Event Reporting', 'HAI Module', 'Process Measures', 'Advanced', 'My Custom Output', and 'Published Output'.

Generating Datasets

NHSN Home Logged into Angela?s LTC Test Facility (ID 39455) as GVB3.
Facility Angela?s LTC Test Facility (ID 39455) is following the LTCF component.

Generate Data Sets

Generate Long Term Care Facility Analysis Data Sets

Datasets generated will include data for the 3 most recent full calendar years up until today's date for the Patient Safety Component. To include all years check the box below.

For all other components, datasets generated will include all years. Note that any analysis options you run will be limited to the time period shown on the date range bar.

Include all data reported to NHSN for this component

3/2015 9/2015

Generate New Last Generated: Sep 24 2015 4:32PM

Clicking the 'Generate New' button will schedule your data set generation. You may log out or continue to work in other areas of NHSN. When you return to this screen you will see a progress bar if still processing, otherwise, you will see a time completed.

Message from webpage
The current data sets will be overwritten.
Are you sure you want to continue?
OK Cancel

Generating Datasets

NHSN - National Healthcare Safety Network (apt-v-nhsn-test:8081) | N

NHSN Home
Alerts
Reporting Plan
Resident
Event
Summary Data
Analysis
 Generate Data Sets
 Output Options
Surveys
Users
Facility
Group
Tools
Log Out

Logged into Pike Nursing Home (ID 11106) as EMUNGAI.
Facility Pike Nursing Home (ID 11106) is following the LTCF component.

Generate Data Sets

Data sets are being generated, Please Wait....

Processing ItcFacility (89%)

Your data set generation has been scheduled. You may log out or continue to work in other areas of NHSN. When you return to this screen you will see a progress bar if still processing, otherwise, you will see a time completed.

Recommended!

- ❑ Since data are *FROZEN* when you generate datasets, any changes made to your data within NHSN after that point in time will not be represented in your reports until you generate datasets again.

Analysis Output Options

- ❑ After datasets are generated, you are ready to analyze your data in NHSN
- ❑ Reports are referred to as “Output Options”
- ❑ Output options are organized into folders that will guide you toward the data you wish to analyze

ANALYSIS OUTPUT OPTIONS LABID EVENTS

Analysis Output Options

After generating datasets...

- ❑ To access the output options, navigate to Analysis > Output Options.
- ❑ The output options are organized into folders, first by module (e.g., MDRO/CDI Module; HAI Module)

The screenshot shows the NHSN Home interface. The left sidebar contains a navigation menu with the following items: Alerts, Reporting Plan, Resident, Event, Summary Data, Analysis, Generate Data Sets, Output Options, Surveys, Users, Facility, Group, and Log Out. A hand icon points to the 'Analysis' menu item, and a red arrow points to the 'Output Options' sub-item. The main content area displays the user's login information: 'Logged into Angela?s LTC Test Facility (ID 39455) as AANTTILA. Facility Angela?s LTC Test Facility (ID 39455) is following the LTCF component.' Below this, the page title is 'Long Term Care Facility Component' with the subtitle 'Analysis Output Options' and a 'HELP' link. There are two buttons, 'Expand All' and 'Collapse All', followed by a list of folders: MDRO/CDI Module - LABID Event Reporting, HAI Module, Process Measures, Advanced, My Custom Output, and Published Output.

CDC-Defined Output

NHSN Home | Logged into Angela LTCF Test Facility (ID 39455) as GVB3.
Facility Angela LTCF Test Facility (ID 39455) is following the LTCF component.

Alerts
Reporting Plan
Resident
Event
Summary Data
Analysis
 ▣ Generate Data Sets
 ▣ Output Options
Surveys
Users
Facility
Group
Log Out

Long Term Care Facility Component
Analysis Output Options [HELP](#)

Expand All Collapse All

- MDRO/CDI Module - LABID Event Reporting ←
 - All LabID Events
 - All MRSA LabID Events
 - All MSSA LabID Events
 - All C. difficile LabID Events ←
 - Hand icon CDC Defined Output
 - Line Listing - All CDI LabID Events Run Modify
 - Rate Tables for CDI LabID Event Data Run Modify
 - Custom Output
 - All VRE LabID Events
 - All CephR- Klebsiella LabID Events
 - All CRE LabID Events
 - All CRE- Klebsiella LabID Events
 - All CRE-Ecoli LabID Events
 - All CRE-Enterobacter LabID Events
 - All Acinetobacter LabID Events

CDC-Defined Output

□ Line Lists

- Allows for record-level review of data
- Helpful in pinpointing issues in data validity/quality



Line list

National Healthcare Safety Network

Line Listing - All CDI LabID Events

As of: January 28, 2016 at 1:57 PM

Date Range: All LTCLABID_EVENTS

1	2	3	4	5	6	7	8	9
orgID	resID	curAdm Date	eventID	eventDate	spcOrgType	specimenSource	location	xferFrom
39455	2468	12/25/2014	3140	01/05/2015	CDIF	STOOL	1 D	Y
39455	444444	10/25/2014	3179	01/10/2015	CDIF	STOOL	4 GEN	N
39455	111111	01/01/2015	3134	01/15/2015	CDIF	STOOL	1 D	N
39455	111111	02/01/2015	3219	02/01/2015	CDIF	STOOL	4 GEN	Y
39455	123456	02/01/2015	3222	02/01/2015	CDIF	STOOL	4 GEN	Y
39455	444444	02/01/2015	3225	02/01/2015	CDIF	STOOL	4 GEN	N
39455	45678	02/01/2015	3226	02/01/2015	CDIF	STOOL	4 GEN	N
39455	777777	02/01/2015	3192	02/01/2015	CDIF	STOOL	4 GEN	Y
39455	111111	12/15/2014	3216	02/15/2015	CDIF	STOOL	4 GEN	N
39455	444444	11/15/2014	3215	02/15/2015	CDIF	STOOL	4 GEN	N
39455	45678	02/01/2015	3227	02/15/2015	CDIF	STOOL	4 GEN	N
39455	777777	02/01/2015	3193	02/15/2015	CDIF	STOOL	4 GEN	Y
39455	222222	02/21/2015	3175	02/27/2015	CDIF	STOOL	4 GEN	N
39455	123456	03/01/2015	3285	03/25/2015	CDIF	STOOL	4 GEN	Y
39455	2468	11/01/2015	4550	11/03/2015	CDIF	STOOL	4 GEN	Y
39455	111111	12/15/2014	4539	11/10/2015	CDIF	STOOL	4 GEN	N
39455	222222	11/10/2015	4553	11/13/2015	CDIF	STOOL	3 REHAB	Y
39455	123456	02/01/2015	4538	11/15/2015	CDIF	STOOL	4 GEN	N
39455	2468	11/01/2015	4552	11/29/2015	CDIF	STOOL	4 GEN	Y
39455	222222	11/20/2015	4554	11/30/2015	CDIF	STOOL	3 REHAB	Y
39455	123456	01/01/2016	4798	01/10/2016	CDIF	STOOL	4 GEN	Y
39455	111111	01/01/2016	4745	01/12/2016	CDIF	STOOL	4 GEN	Y

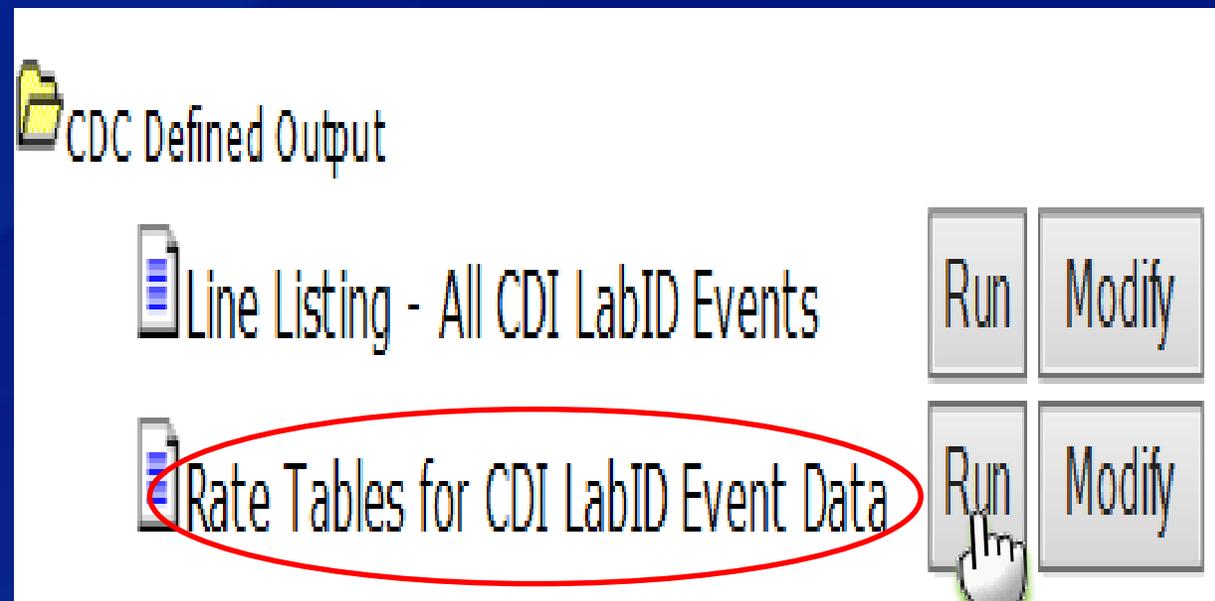
Sorted by eventDate location

Data contained in this report were last generated on January 27, 2016 at 4:55 PM.

CDC-Defined Output

□ Rate tables

- Display a facility's calculated rates
- Helpful in pinpointing issues in data validity/quality



LTCF onset (LO) incident CDI rate

National Healthcare Safety Network Rate Tables for CDI LabID Event Data

LTCF-Onset (LO) Incident CDI Rate

As of: January 27, 2016 at 3:27 PM
Date Range: All LTCLABID RATESCDIF

orgID=39455

1 summaryYM	2 location	3 ItcCDILOIncCount	4 numResDays	5 ItcLOCDIIncRate
2015M01	FACWIDEIN	3	100	300
2015M02	FACWIDEIN	1	500	20
2015M03	FACWIDEIN	0	350	0
2015M04	FACWIDEIN	0	410	0
2015M05	FACWIDEIN	0	1250	0
2015M06	FACWIDEIN	0	1000	0
2015M07	FACWIDEIN	0	1000	0
2015M08	FACWIDEIN	0	500	0
2015M10	FACWIDEIN	0	205	0
2015M11	FACWIDEIN	3	120	250

Incident LO CDI LabID event counts include ACT-LO.

Recurrent CDI events are excluded.

Source of aggregate data: Not available

Data contained in this report were last generated on January 27, 2016 at 1:55 PM.

LTCF-onset Incidence
rate (column 5) =
(column 3/ column 4) x
10,000

ANALYSIS OUTPUT OPTIONS

UTI EVENTS

CDC-Defined Output

NHSN Home | Logged into Angela's LTC Test Facility (ID 39455) as AANTTILA.
Facility Angela's LTC Test Facility (ID 39455) is following the LTCF component.

Long Term Care Facility Component
Analysis Output Options [HELP](#)

Expand All | Collapse All

- MDRO/CDI Module - LABID Event Reporting
- HAI Module** ←
- Process Measures
- Advanced
- My Custom Output
- Published Output

Left Navigation Menu: Alerts, Reporting Plan, Resident, Event, Summary Data, Analysis (Generate Data Sets, Output Options), Surveys, Users, Facility, Group, Log Out



HAI Module

- All UTI Events
 - CDC Defined Output
 - Line Listing - All UTI Events [Run] [Modify]
 - Rate Table - Total UTI Rate [Run] [Modify]
 - Line Listing - All UTI Events with Catheter [Run] [Modify]
 - Rate Table - CA-SUTI Incidence Rate [Run] [Modify]
 - Line Listing - All UTI Events without Catheter [Run] [Modify]
 - Rate Table - SUTI Incidence Rate [Run] [Modify]

CA-SUTI Data Analysis

□ Calculating the CA-SUTI Rate

- CA-SUTI incidence rate per 1,000 indwelling catheter days

$$\text{CA-SUTI Rate} = \frac{\text{\# CA-SUTIs identified}}{\text{Urinary catheter days}} \times 1000$$

- Only symptomatic events which develop at the time an indwelling catheter is in place or has been removed in the last 2 calendar days will be included.

SUTI Data Analysis

□ Calculating the SUTI Rate

- SUTI incidence rate per 1,000 “non-catheter” resident days

$$\text{SUTI Rate} = \frac{\text{\# SUTIs identified}}{\text{Resident days – urinary catheter days}} \times 1000$$

- Only SUTIs which are NOT catheter-associated are included
 - Remember: Events in residents with other urinary devices such as suprapubic catheters are counted as SUTI

Urinary Catheter Use Analysis

□ Urinary catheter utilization ratio

$$\text{Urinary catheter utilization} = \frac{\text{Urinary catheter days}}{\text{Resident days}}$$

- Device utilization ratio measures the proportion of total resident-days during which indwelling urinary catheters were used
- **NOTE:** Indwelling catheter use is necessary for CA-SUTI. Therefore reducing your facility catheter utilization rate, may lead to reduced CA-SUTI rates.

Antibiotic use for UTI Analysis

□ UTI treatment ratio

$$\text{UTI treatment ratio} = \frac{\text{New antibiotic starts for UTI}}{\text{Total UTI count (SUTI+CASUTI+ABUTI)}}$$

- UTI treatment ratio compares the number of clinically treated UTIs to the number of UTIs meeting NHSN surveillance definitions
- NOTE: When the UTI treatment ratio is >1 , there are more antibiotic starts for UTI than symptomatic UTI events submitted

CDC-Defined Output

NHSN Home Logged into Angela's LTC Test Facility (ID 39455) as AANTTILA.
Facility Angela's LTC Test Facility (ID 39455) is following the LTCF component.

Long Term Care Facility Component
Analysis Output Options [HELP](#)

Expand All Collapse All

- MDRO/CDI Module - LABID Event Reporting
- HAI Module** ←
- Process Measures
- Advanced
- My Custom Output
- Published Output

Alerts
Reporting Plan
Resident
Event
Summary Data
Analysis
 Generate Data Sets
 Output Options
Surveys
Users
Facility
Group
Log Out



HAI Module

- All UTI Events
 - CDC Defined Output** ←
 - Line Listing - All UTI Events Run Modify
 - Rate Table - Total UTI Rate Run Modify
 - Line Listing - All UTI Events with Catheter Run Modify
 - Rate Table - CA-SUTI Incidence Rate Run Modify
 - Line Listing - All UTI Events without Catheter Run Modify
 - Rate Table - SUTI Incidence Rate Run Modify

Line listing: All UTI events

National Healthcare Safety Network

Line Listing - All UTI Events

As of: February 10, 2016 at 3:05 PM

Date Range: All LTCUTI_EVENTS

1	2	3	4	5	6	7	8
orgID	resID	curAdm Date	eventID	eventDate	ltcSpcEvent	cathStatus	location
39455	11111	12/15/2014	3176	01/15/2015		INPLACE	1 D
39455	123456	03/18/2015	3491	03/25/2015		INPLACE	4 GEN
39455	2468	04/15/2015	3527	04/25/2015		INPLACE	4 GEN
39455	123456	04/25/2015	3598	04/29/2015	ABUTI	INPLACE	4 GEN
39455	333333	01/01/2015	3178	01/12/2015	CA-SUTI	INPLACE	4 GEN
39455	222222	12/15/2014	3177	01/29/2015	CA-SUTI	REMOVE	4 GEN
39455	2468	02/01/2015	3141	02/05/2015	CA-SUTI	INPLACE	1 D
39455	2468	03/15/2015	3294	04/05/2015	CA-SUTI	INPLACE	4 GEN
39455	2468	04/02/2015	3599	04/10/2015	CA-SUTI	INPLACE	4 GEN
39455	2468	04/01/2015	3481	04/15/2015	CA-SUTI	INPLACE	1 D
39455	123456	10/15/2015	4445	10/20/2015	CA-SUTI	INPLACE	4 GEN
39455	2468	11/01/2015	4551	11/05/2015	CA-SUTI	INPLACE	4 GEN
39455	111111	01/01/2016	4746	01/12/2016	CA-SUTI	INPLACE	4 GEN
39455	11111	04/05/2015	3615	04/11/2015	SUTI	NEITHER	4 GEN
39455	11111	04/10/2015	3621	04/13/2015	SUTI	NEITHER	1 D
39455	123456	04/10/2015	3597	04/15/2015	SUTI	NEITHER	4 GEN
39455	12345	07/20/2015	4055	09/01/2015	SUTI	NEITHER	4 GEN
39455	123456	10/15/2015	4456	10/18/2015	SUTI	NEITHER	4 GEN
39455	111111	10/11/2015	4457	10/18/2015	SUTI	NEITHER	4 GEN

Sorted by ltcSpcEvent eventDate cathStatus

Data contained in this report were last generated on January 29, 2016 at 2:46 PM.

Rate Table: CA-SUTI incidence Rate

National Healthcare Safety Network CA-SUTI Incidence Rate

As of: February 10, 2016 at 4:42 PM
Date Range: All LTCCASUTI_RATES

orgID=39455

1 location	2 summaryYM	3 CA SUTICount	4 numLTUCathDays	5 CA SUTIRate	6 num Res Days	7 CathDU
FACWIDEIN	2015M01	2	20	100.000	50	0.400
FACWIDEIN	2015M02	1	100	10.000	150	0.667
FACWIDEIN	2015M03	0	20	0.000	60	0.333
FACWIDEIN	2015M04	3	42	71.429	65	0.646
FACWIDEIN	2015M05	0	15	0.000	50	0.300
FACWIDEIN	2015M06	0	40	0.000	70	0.571
FACWIDEIN	2015M08	0	20	0.000	65	0.308
FACWIDEIN	2015M10	1	20	50.000	50	0.400
FACWIDEIN	2015M11	1	25	40.000	60	0.417

CA-SUTI Rate(column 5) =
(column 3/ column 4) x
1,000

CathDU=
Urinary
catheter days
(column 4) /
Resident days
(column 6)

Source of aggregate data: Not available

Data contained in this report were last generated on February 10, 2016 at 3:49 PM.

**ANALYSIS OUTPUT OPTIONS
PREVENTION PROCESS MEASURES**

CDC-Defined Output

NHSN Home Logged into Angela's LTC Test Facility (ID 39455) as AANTTILA.
Facility Angela's LTC Test Facility (ID 39455) is following the LTCF component.

Long Term Care Facility Component
Analysis Output Options [HELP](#)

Expand All Collapse All

- MDRO/CDI Module - LABID Event Reporting
- HAI Module
- Process Measures ←
- Advanced
- My Custom Output
- Published Output

Alerts
Reporting Plan
Resident
Event
Summary Data
Analysis
 Generate Data Sets
 Output Options
Surveys
Users
Facility
Group
Log Out



Process Measures

- Specific Process Measures
 - CDC Defined Output
 - Line Listing - All Process Measures Run Modify
 - Rate Table - Hand Hygiene Adherence Run Modify
 - Rate Table - Gown/Glove Adherence Run Modify

Line listing: All Process Measures

National Healthcare Safety Network Line Listing for All Process Measures

As of: February 10, 2016 at 4:57 PM

Date Range: All LTCPM

1	2	3	4	5	6	7
orgID	summaryYM	location	hhPerformed	hhIndicated	ggUsed	ggIndicated
39455	2015M01	FACWIDEIN	100	120	100	150
39455	2015M02	FACWIDEIN	50	77	60	80
39455	2015M03	FACWIDEIN	100	120	150	180
39455	2015M04	FACWIDEIN	75	80	80	88
39455	2015M05	FACWIDEIN	100	150	200	200
39455	2015M06	FACWIDEIN	90	100	100	150
39455	2015M07	FACWIDEIN	100	100	100	100
39455	2015M08	FACWIDEIN	150	200	200	200
39455	2015M10	FACWIDEIN	567	675	120	270
39455	2015M11	FACWIDEIN	500	550	125	140

Sorted by summaryYM

Data contained in this report were last generated on February 10, 2016 at 3:49 PM.

Rate Table: Hand Hygiene Adherence

National Healthcare Safety Network Rate Table for All Hand Hygiene Adherence

As of: February 10, 2016 at 5:00 PM

Date Range: All LTCHH_RATES

orgID=39455

1	2	3	4	5
location	summaryYM	hhPerformed	hhIndicated	HH_adhRate
FACWIDEIN	2015M01	100	120	83.333
FACWIDEIN	2015M02	50	77	64.935
FACWIDEIN	2015M03	100	120	83.333
FACWIDEIN	2015M04	75	80	93.750
FACWIDEIN	2015M05	100	150	66.667
FACWIDEIN	2015M06	90	100	90.000
FACWIDEIN	2015M07	100	100	100.000
FACWIDEIN	2015M08	150	200	75.000
FACWIDEIN	2015M10	567	675	84.000
FACWIDEIN	2015M11	500	550	90.909

HH_adhRate=
Hhperformed /
hhindicated

Source of aggregate data: Not available

Data contained in this report were last generated on February 10, 2016 at 3:49 PM.

General Tips for Analyzing Data in NHSN

- ❑ **Develop a timeline to regularly analyze facility data entered into NHSN**
 - Consider a frequency that would allow for timely feedback and interventions if necessary
 - Example: Monthly review of rates and event-level details
- ❑ **Generate datasets regularly**
- ❑ **Read the footnotes on your reports!!!**
- ❑ **Review data for accuracy and completeness**

Available Resources One Stop Shopping



- ❖ **NHSN LTCF website:** <http://www.cdc.gov/nhsn/LTC/>
 - ❖ Long-term Care Facility Component
 - Training
 - Protocols
 - Data collection forms
 - Tables of instructions for completing all forms
 - Key terms
- ❖ **NHSN Home Page:** <http://www.cdc.gov/nhsn/>
- ❖ **Questions or Need Help?** Contact User Support at nhsn@cdc.gov
- ❖ **LTCF Resources:** <http://www.cdc.gov/longtermcare/index.html>

Thank you!

